

fuller official recognition of the need for variety in Polytechnics and other institutions which do not come necessarily under the designation of "science and art" schools.

The problem how to determine the curriculum of a special school for youths of fifteen or sixteen destined for the conduct of business in a merchant's or banker's office becomes, therefore, one of considerable practical importance, and a large part of this book is devoted to its solution. Prominent among the conditions of success is the practice of *oral* instruction in modern languages, and constant conversational exercise as a necessary preliminary to book work and the technicalities of grammar. "The ear often remains untaught even after the eye has grasped all there is to know of the grammar and construction of the language." In this connection the particulars given in the book respecting the travelling scholarships of Germany and Switzerland and Belgium, and other devices for acquiring practical familiarity with the spoken language, are helpful and suggestive. The authors very properly insist on the need of a thorough acquaintance with arithmetic; but they evidently attach more importance to varied practical exercise in the art of computing, and to its application to tariffs, freightage, exchanges and other technicalities which have a visible and immediate relation to markets and counting houses, than to arithmetic as a science. The best experience on this subject, however, points to the conclusion that the learner whose attention has been directed, by means of demonstrative lessons and by some instruction in algebra, to the theory which underlies the truths of arithmetic, is in a better position to apply his knowledge in after life to business problems, whatever form they may happen to take, than he who has prematurely loaded his memory with rules and terminology relating to the details of commerce. On the subject of geography, and the effect of climate and physical conditions upon the nature and value of products, some hints are given which are well calculated to suggest to teachers more practical and interesting methods of teaching than are generally adopted in geographical lessons. The authors are right also in attaching importance to some knowledge of political economy, a subject which receives a good deal of attention in the higher commercial departments attached to the *Real-schulen* of Germany. It is hardly recognised in England yet that the elements of social economics and the general conditions of industrial prosperity, the relative values of different kinds of labour, the laws which govern the rate of wages and the interest of money are subjects which can be made very intelligible and attractive to young people towards the end of their school life, and before entering into the arena of business competition. Such knowledge is not without a moral value of its own, for it reveals to the learner the need of industry, forethought, punctuality, self-restraint and thrift, and goes far to show the relation of conduct to real success in life.

The particulars given in this book respecting the College of Commerce and Politics in the University of Chicago, the Higher Institute of Commerce at Antwerp, the School of Commerce in Neuchâtel, and the commercial courses of University grade at Magdeburg, Frankfurt, Berlin, Dusseldorf and Leipsic, may serve to remind us of the fact that in England scientific pre-

paration for the profession of commerce has hitherto not been recognised as a legitimate part of University work. A step has indeed been recently taken, thanks to the boundless munificence of Mr. Passmore Edwards, towards the permanent establishment of a School of Economics and of Commerce in connection with the renovated University of London. Much may be hoped from this novel and interesting experiment. *Inter alia* it may have a great effect on schools and other institutions of a lower rank, whose pupils will hereafter graduate in the new Faculty of Commerce. It is one of the offices of a University to show how the higher professions may be aided and quickened, and by setting up a lofty standard of thorough and scientific preparation, to reveal the true relations of academic culture to the qualities which make successful merchants and captains of industry. If this object be attained at the apex of our educational structure in the Universities, the aims of those who control the lower agencies, such as commercial classes in Polytechnics and in secondary schools will become clearer, and the practice of those institutions will be freed from the narrowing influences which have been long associated with the more ignoble type of "commercial academy."

The modest design described in the preface and the title of this volume has, on the whole, been usefully and sensibly attained. Those readers who seek the latest information respecting the ideals of "commercial education" which prevail in America and on the European continent, and the machinery which exists for translating those ideals into practice, will find much to interest them. But those who are trying to make up their minds on the larger problems—What is the place which special knowledge of commercial subjects ought to hold in a scheme of liberal education? How are we to secure that the higher claims of manhood and intelligence shall not be sacrificed prematurely to the lower claims of money-making and "getting on"? and What other studies ought to be pursued concurrently with business training in order to maintain the right balance of character in the future citizen?—must look elsewhere for the help and guidance they desire.

THE BIRDS OF ICELAND.

Manual of the Birds of Iceland. By Henry H. Slater, M.A., F.Z.S. Pp. xxiii + 150; 3 plates and map. (Edinburgh: David Douglas, 1901.) Price 5s. net.

MR. Slater has very acceptably filled the want, which many of us have felt, of a handy manual on the birds of Iceland. Much information on the subject is to be found scattered among Icelandic, Danish, German, Latin and English books and periodicals (the bibliography in the present volume comprises more than sixty titles), and this has now been revised and condensed in a compendious, handy form. Added to this we have now the personal observations made by the author in the occasional visits he has paid to Iceland during the last fifteen years, making altogether the most (indeed the only) complete account of the birds of this out-of-the-way corner of Europe which we possess. Without ministering to the insatiable appetite of the egg collector by disclosing the

exact breeding localities of the rarer birds, the author has striven to make his manual useful to the many Englishmen who go to Iceland every year for various purposes, and who may take some interest in its birds. Besides reviewing and recommending certain earlier accounts of the ornithology, he names a good guide-book and some maps; and he gives a brief but useful description of the plumage of most of the birds (except those that are common and universally known) and also of the nests and eggs. In the introduction, too, we find some very necessary remarks on the English habit of misspelling and mispronouncing Icelandic words. And following this, and a statement upon the law as to the close-time for birds in Iceland, are three pages of most instructive suggestions on the right pronunciation of the language. All the species on the Icelandic list (one hundred and three, exclusive of eleven the occurrence of which is doubtful, and one, the great auk, which is extinct) are clearly and accurately dealt with in the body of the work; and the native names of the birds, if any, are indicated. The volume is in truth a manual, and its handy size will enable any traveller, however light his baggage, to find room for it.

From its geographical position, far north, and on the extreme west of the Palæarctic region, the avifauna is, as might be expected, a somewhat poor and limited one. It is made up, roughly speaking, of thirty-seven resident species, twenty-seven summer migrants (making sixty-four breeding species, three of which are a little doubtful), twenty-one occasional visitors and eighteen rare stragglers. The resident land-birds number only seven, and the land-birds which come to Iceland in summer to breed only five. The fauna is poorest in Passeres, of which we in England have so many; in Iceland there are only nineteen, eleven of which are only occasional or rare visitors. There are seven birds of prey on the list, two of which are resident and one a summer migrant. The three owls are only visitors. There is one game-bird, viz. the rock ptarmigan. We should add that the author is not responsible for this attempt to analyse the Icelandic avifauna. The great auk at one time resorted to Iceland. Nowadays, perhaps, the northern wren, the great northern diver (a western species, breeding nowhere else in Europe, unless it does so in the north of Scotland), and the Iceland falcon, famous among falconers in old days, are the most interesting birds to be found there. With regard to the wren (which is protected all the year round by law) the author remarks that there can be no reasonable doubt that the great increase of domestic cats in Iceland of recent years is leading very rapidly to its extermination—a fact which bird-protectionists in England would do well to lay to heart. But Iceland is very rich in ducks and geese, sixteen—possibly eighteen—species breeding there. Perhaps from a zoogeographical point of view Iceland is most interesting as forming a link between the Palæarctic and Nearctic regions. Indeed, the number of birds which are common to the Icelandic and Greenlandic avifaunas, either as regular inhabitants or wanderers, is surprising. The manual, illustrated by three interesting plates and a map, is one of the most acceptable books which have fallen into the hands of the ornithologist for a long time.

OUR BOOK SHELF.

Blütengeheimnisse: Eine Blütenbiologie in Einzelbildern. By Georg Worgitzky. Mit 25 Abbildungen im Text. Buchschmuck von J. V. Cissarz. Pp. x + 134. (Leipzig: Teubner, 1901). Price 3 marks.

THIS title recalls that which was used in 1793 by Christian Konrad Sprengel, and to him the author traces the beginning of the bionomical study of flowers and their fertilisation which forms the subject of the little book before us. Since Sprengel laid the foundations there have been many workers, notably Darwin and Hermann Müller, and many new facts have come to light, while others observed more than a century ago have been rendered more precise. Therefore the author has been led to supply an introduction to the study, simple enough for beginners, and at the same time up-to-date. His method has been to select two dozen common plants, in flower at various times of year from February to October, and to tell the story of their pollination.

Poppy, wild rose, lime, buttercup, forget-me-not, meadow cranesbill and wild radish form the first and simplest group; white dead-nettle, iris, violet, campanula, figwort, cowslip and pink introduce the student to slight complications; broom, spotted orchis, wild carrot, centaury and ling illustrate special adaptations; while flowers pollinated by the wind are exemplified by ribwort, rye, hazel, willow and pine tree. The second part of the book is occupied with a simple discussion of the parts of the flower, the modes of attracting useful visitors, and warding off those that are injurious, dichogamy, self-pollination and kindred topics.

We cannot say that there is either novelty or individuality in Worgitzky's book, but it is clear, accurate, without waste of words, and objective from first to last. The pages are adorned with decorative devices and there are twenty-five simple figures with the amount of enlargement always indicated. Our only grumble is that the author keeps so consistently to the rôle of the descriptive naturalist and does not discuss the numerous evolutionist problems which his facts inevitably raise in the inquiring mind. Of course this must have been done deliberately, but we think that the author should have given clearer indication that beyond the floral secrets which he lays bare there lie others not less fascinating, though more mysterious.

The Lepidoptera of the British Islands: a Descriptive Account of the Families, Genera and Species Indigenous to Great Britain and Ireland, their Preparatory States, Habits and Localities. By Charles G. Barrett, F.E.S. Vol. vii. Heterocera, Geometrina. Pp. 335. (London: Lovell Reeve and Co., Ltd., 1901.) Price 12s. net; large paper, with coloured plates, 63s. net.

AMONG the numerous smaller publications on British Lepidoptera, most of which are useful and interesting in their own way, Mr. Barrett's great work pursues the even tenor of its course, a Triton among minnows, and likely to hold its place as the standard work for the student of British Lepidoptera for many a long day.

The present volume includes the full life-history, as far as is known, of eighty-four species of Geometridæ considered as British, two or three more being incidentally mentioned as European species probably admitted into our British lists by error. These are placed in the three families Boarmidæ, Geometridæ and Acidalidæ, the genus *Ephyra* being included in the latter family (*Ephyra* and *Hyria* being the only genera of the last family included in this volume), while the portion of the Boarmidæ which falls into it includes species formerly classed in Guenée's families *Fidonidæ*, *Ennomidæ*, *Amphidasidæ*, *Boarmidæ*, *Hibernidæ*, *Zerenidæ* and *Ligidæ*. Guenée's subdivision of the Geometridæ was never accepted in Germany, where the number of families was reduced by